

depression pale golden pollinose without any carina. Antennae reaching lowest fourth of face, all three segments black; the third segment about one and one-fourth times as long as the second. Arista thickened on basal half, the penultimate segment scarcely longer than broad. Width of front at narrowest point equal to about three-fourths the length of the second antennal segment; the front silvery pollinose; frontal vitta reddish brown, the narrowest width equal to about one-half the width of front at vertex. No orbital bristles, the proclinate ocellar bristles fairly well developed; the single row of frontal bristles descending to about the middle of the second antennal segment.

Thorax subshining, black, covered with gray pollen, scutellum gray pollinose on a black ground and showing no red coloration even at the extreme tip. Typically three sternopleural bristles and three pairs of dorsocentrals; scutellum with three strong pairs of marginal macrochaetae, with an apical cruciate weaker pair and without any discals. Legs black, the middle tibiae with two or more bristles on the front side near the middle, the hind tibiae without a comb-like row of bristles on the outer side. Wings hyaline; R_{4+5} (third vein) with a group of two to five hairs both above and below at the junction of R_{2+3} ; the bend of M_{1+2} destitute of an appendage. Tegulae white.

Abdomen subshining; very lightly silvery pollinose on a black ground. Discal and marginal macrochaetae present on the second, third and fourth abdominal segments. The hind margin of the third tergum very strongly arcuate; the fifth tergum readily marked off from the sixth at the lateral part but medially indistinguishable from it. The lateral width of the fifth tergum equal to about one-third the lateral width of the fourth abdominal segment; the sixth and seventh abdominal segments forming the somewhat distended genital segments.

Genitalia black; differing from all other known nearctic species in having an exceedingly long keel-like portion at the base of the inner forceps (named on account of this unusually long keel). The basal part of the outer forceps covered over by a broad, leaf-like portion.

The horseshoe-shaped indenture of the last sternite extending slightly more than half the distance to the base of the blade.

Described from four males collected by Mr. E. C. Van Dyke at Lake Tahoe, California on September 20th.

Type and one paratype in the Cal. Acad. Sci. One paratype in the Canadian National Collection, Ottawa. One paratype in the U. S. N. M.

(To be Continued.)

A REVIEW OF THE GENUS MONOCHAMUS SERV. (CERAMBYCIDAE, COLEOPTERA)

BY RALPH HOPPING,

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A study of long series of the different species of this genus has made it evident that a few changes in the synonymy are necessary. The writer's interpretation of the North American species is expressed in the accompanying key.

Leng and Hamilton* place *obtusus* Casey and *oregonensis* Lec. as synonyms of *scutellatus*; but all three of them appear to be distinct. Col. Casey has transferred *oregonensis*** Lec. to the dentiform group, but the writer feels he must have mistaken a black form of *maculosus* for that species: this would account for the description of *monticola* Casey, which appears to be the true *oregonensis* Lec.

The most strongly maculated species are *titillator*, *maculosus*, *obtusus* and *marmorator*. *M. maculosus* may be densely black or reddish brown, although the red-brown individuals are probably newly emerged.

The length of the antennae varies greatly within the limits of each species and appears to the writer to be of little specific importance. The sexes, however, can be separated by antennal characters, since the females of all species have the antennae but little longer than the body, often with the segments bicolored, while the males have the antennae much longer than the body and the segments as a rule unicolorous.

The size varies greatly in each species apparently according to the condition of the food supply. Individuals are generally smaller in arid sections where the recently fallen or cut timber dries rapidly.

The key to the species herein submitted is based upon an examination of the material in the Oregon Agricultural College, very kindly loaned by Professor Lovett, the material in the collection of the California Academy of Sciences, that in the private collection of Dr. F. E. Blaisdell and Dr. E. C. Van Dyke, the Ottawa collection of the Entomological Branch and that of the author.

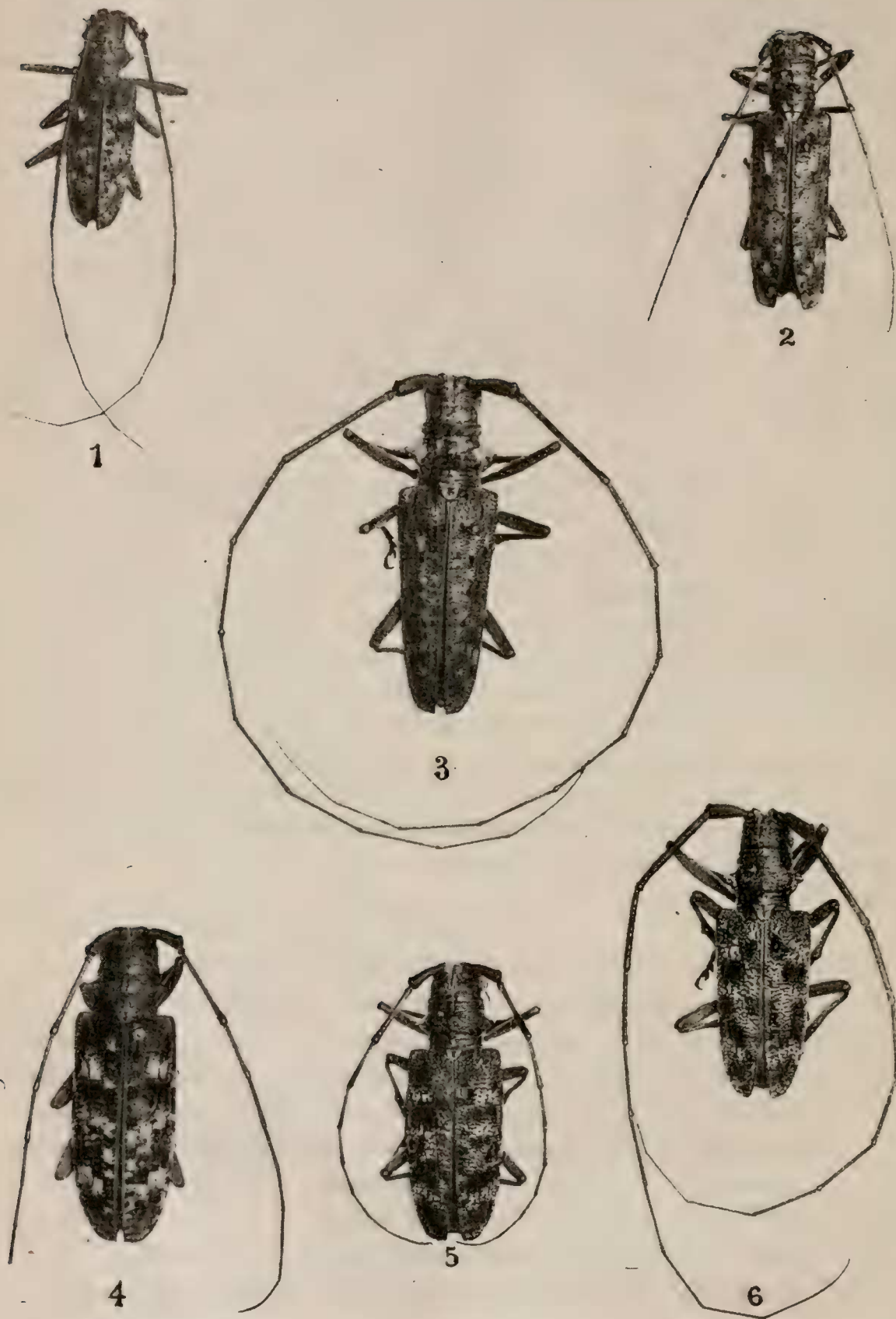
M. angusticollis is known only from the description. Of the species included in the table the writer has examined the following number of adults:—12 *marmorator*, 17 *obtusus*, 85 *maculosus*, 50 *titillator*, 102 *oregonensis*, more than 200 *notatus* and over 500 *scutellatus*.

KEY TO SPECIES.

- A. Apices of elytra produced into an acute spine or blunt process.
 - B. Process of elytral apex arising from sutural angle.
 - C. Process of elytral apex slender, acute or subacute; body and antennae comparatively slender; punctation of elytra sparse and fine, ashy vestiture in more or less definite areas; general color reddish *titillator* Fab.
 - CC. Process of elytral apex blunt; body comparatively short and robust; punctation of elytra dense and coarse, ashy vestiture more or less diffused; general color black or rufous *maculosus* Hald.
 - BB. Process of elytral apex not arising from sutural angle.
 - C. Process of elytral apex arising from the rounded apices, spinous
angusticollis Casey
 - CC. Process of elytral apex arising from the obliquely prolonged apices; vestiture of elytra often in definite patches; general color yellowish brown *marmorator* Kirby

*Transactions Am. Ent. Soc., 1896, XXIII, p. 109.

**Memoirs on the Coleoptera, IV, 1913.



THE GENUS MONOCHAMUS

Fig. 1.—*M. titillator*, ♂ ; 2.—*M. notatus* ♀ ; 3.—*M. notatus*, ♂ ; 4.—*M. titillator*, ♀ ;
 5.—*M. maculosus*, ♀ ; 6.—*M. maculosus* ♂. (All figures enlarged one-half.)

AA. Apices of elytra not produced into a spine or process.

B. Elytral apex obtusely angulated at the suture.

C. Elytra without raised linear elevations.

D. Scutellum generally covered with ashy scales, posterior margin rounded; elytra with a vague bronze lustre, maculation often entirely absent; general color black *scutellatus* Say

DD. Scutellum bilobed or V-shaped with only the lobes covered with ashy scales and separated by a minute triangular glabrous area; maculation of elytra absent or sparse; general color densely black.

oregonensis Lec.

CC. Elytra with raised linear elevations.

Scutellum sparsely clothed except towards the margins; elytra densely, finely punctured with scattered, raised, often linear, glabrous areas; general color greyish brown *notatus* Drury

BB. Elytral apex not angulated at the suture, evenly rounded; punctation sparse and fine, scutellum glabrous and rufous; general color rufous.

obtusus Casey

M. titillator Fab. (*Lamia*), 1775, Syst. Ent. p. 279.

carolinensis Oliv.; *minor* Lec.; *dentator* Fab.

Col. Casey has resurrected *carolinensis* Oliv. from the synonymy of this species. Leng and others treat the name as a synonym. In long series every variation in size, maculation and reduction of the spine into a blunt form may be found.

I have a specimen of *titillator* from the southern Sierras of California, which I collected over twenty-five years ago. I have, however, a strong suspicion that my California specimen came from lumber shipped from the east. Former reports of the capture of this species from California probably refer to *M. obtusus* Casey.

The slender antennae and the sparse punctation in the cinereous areas will always serve to separate this species from *maculosus*, besides the differences enumerated in the key; the vestiture consists of light brown or yellowish tomentose areas separated by cinereous areas, sparsely punctured. Specimens from the far north have only indications of the ashy areas, and seem narrower in form; however, I cannot separate them from *titillator* by any definite characters. Length, 13 to 25 mm.

Host.—*Pinus palustris*, *P. strobus* and probably all pines and *Abies balsamea*.

Habitat.—Eastern North America, extending west to Alabama in the south and possibly to British Columbia and Alaska.

M. maculosus Hald., 1874, Trans. Am. Phil. Soc., X, p. 51.

strenuus Casey; *oregonensis* Lec. (Casey); *clamator* Lec.

Col. Casey's interpretation of *M. oregonensis* Lec. as well as his *strenuus* seem to belong here. Occasional specimens of *maculosus* in a series from the same tree show all variations of "rusty brown tomentum". The length of the antennae is very variable in all species and series. The rugosities of the elytra are irregular in form, the vestiture consisting of dark brown, rusty brown or

black tomentum separated by cinereous areas of scales arranged in minute separated groups. Length, 16 to 26 mm.

Hosts.—Breeds more commonly in lodgepole pine (*Pinus contorta*) than in yellow pine (*Pinus ponderosa*).

Habitat.—Colorado, New Mexico, Arizona, California, Oregon, Washington, Nevada, Idaho and British Columbia.

M. angusticollis Casey, 1913, Mem. on the Coleop. IV, p. 292.

I have not seen this species nor can I find that it exists in any collection other than that of Col. Casey, which, since it comes from Texas, is not strange. Material from that state, in the Cerambycidae, seems to be notably absent in collections. The position of the apical spine would separate it from any other species. Length, 18.5 mm.

Host.—Unknown.

Habitat.—Texas.

M. marmorator Kirby, 1837, Faun. Bor. Am. IV, p. 169.

fautor Lec.; *acutus* Lacord.

The characters given in the key are amply sufficient to distinguish this species, which is still rare in collections. The vestiture of the elytra is ochraceous white and brown or black in more or less definite patches. Length, 18 to 25 mm.

Host.—*Abies balsamea*.

Habitat.—New York, Vermont, Nova Scotia to Great Lakes Region.

M. scutellatus Say, (Cerambyx), 1824, Long's Exp. II, p. 289.

resutor Kirby; *mutator* Lec.

I have this species from Alaska, Hudson's Bay, Michigan, Ontario and Massachusetts, and have seen specimens from all the spruce regions of Canada. The vestiture is either wanting or consisting of a few ashy, irregularly placed scales. Some females, however, are fairly well covered with ashy vestiture of no particular design.

Alaskan specimens generally have the femora red but do not seem to differ otherwise. The antennae, especially the scape, seem to be brownish and seldom black as in *M. oregonensis*, and have the elytra vaguely bronzed. The ♀♀ are generally smaller than the ♂♂. Length, 13 to 24 mm.

Hosts.—*Pinus strobus*, *P. banksiana*, *P. resinosa*, *Picea canadensis*, and *Abies balsamea*.

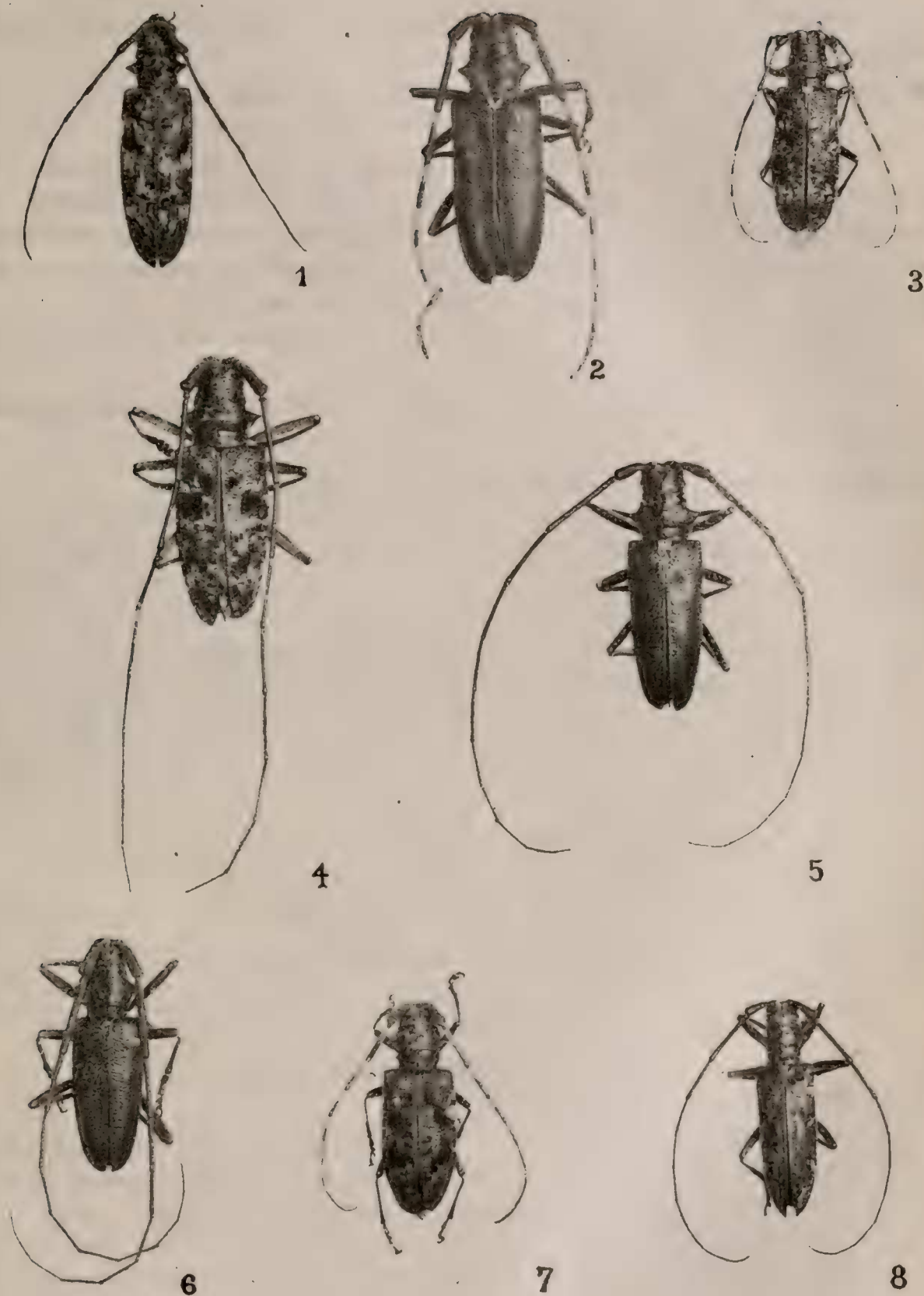
Habitat.—New England, Canada (except British Columbia), Alaska.

M. oregonensis Lec., 1873, Smiths. Misc. Coll., XI, No. 264, p. 231.

monticola Casey.

Mr. Lawrence Reynolds very kindly examined Le Conte's type for me. It was found to agree with what has always been called *oregonensis* in the west. The large stout form, dense black color, and the scutellum distinguish this species. The vestiture is much as in *scutellatus*. The ♀♀ are as large as or larger than the ♂♂. *M. oregonensis* is distributed throughout the west where *Pseudotsuga taxifolia* and *Abies concolor* are found, although it attacks other coniferous species within the area. Length, 13 to 30 mm.

Hosts.—*Abies concolor*, *Abies magnifica*, *Pseudotsuga taxifolia*, *Pinus*



THE GENUS MONOCHAMUS

Fig. 1.—*M. marmorator*, ♀; 2.—*M. oregonensis*, ♀; 3.—*M. scutellatus*, ♀; 4.—*M. obtusus*, ♂; 5.—*M. scutellatus*, ♂; 6.—*M. oregonensis*, ♀; 7.—*M. obtusus*, ♀; 8.—*M. marmorator*, ♂.

contorta. Specimens from *Pinus contorta* are usually smaller, with the elytra of the males more densely maculate.

Habitat.—British Columbia, Washington, Oregon, California, Nevada, Utah, Colorado, Arizona, New Mexico.

M. notatus Drury, 1773, Ills. of Nat. Hist. II, p. 65.

**confusor* Kirby.

This species can be readily distinguished by the smoky grey color. Occasionally the glabrous rugosities become obsolete, or may be rounded. It averages larger than any other species and is a good illustration of the tremendous variation in size, the minimum being .50 inch and the maximum 1.50 inch, an extreme variation of one inch. Length, 16 to 40 mm.

Hosts.—*Pinus strobus*, *P. banksiana*, *P. resinosa*, *P. ponderosa*, *Picea canadensis*.

Habitat.—Northeastern part of the U.S. and Canada, including British Columbia.

M. obtusus Casey, 1913, Mem. on the Coleop. IV, p. 293.

This is a very good species, breeding in pines of north central California, where the cross ranges connect the coast mountains with those of the interior. In maculation and punctation it is much nearer *titillator* than any other species, but has a remarkably short, robust form. The sutural length of the elytra is seldom more than twice the basal width, whereas in all other species it is much more than twice the basal width. The characters given in the key and enumerated by Col. Casey make it impossible to confuse this species with any other. Besides the specimens in my cabinet, I have seen a much larger series in the collection of the Academy of Sciences in San Francisco taken by Dr. E. P. Van Duzee. Length 19 to 23 mm.

Hosts.—*Pinus ponderosa*, *P. contorta*.

Habitat.—California (Lassen and Siskiyou Cos.)

A NEW WESTERN SYRPHID (DIPTERA).

BY C. HOWARD CURRAN,
Orillia, Ont.

Toxomerus occidentalis n. sp.

Mesogramma geminata Williston (in part).

Differs from *T. geminatus* Say in the shape of the process on the hind femora, which is shorter and bears a shorter and stouter arm; the front is wider in the female, the vertical triangle slightly wider in the male; band on first segment always interrupted in both sexes.

Length, 6.5 to 8 mm. ♂. Face yellow, below and at the sides finely silvery pubescent; cheeks black behind. Antennae reddish yellow, arista black; vertical triangle long, narrow, black, in front and at the vertex with yellowish pollen, in the middle very shining; eyes less distinctly touching than in *T. geminatus*, especially dorsally. Pile of the front whitish, a few blackish hairs immediately above the antennae, and entirely black on the vertical triangle.

*It is a little doubtful if Drury's species *notatus*, from Norway is our *confusor* and the latter name may have to be re-established,

Posterior orbits greyish pollinose, becoming more yellowish above.

Thorax shining greenish, somewhat bronzed black, with three broad, subcontiguous opaque brownish bronzed stripes; median cinereous line distinct on the anterior half. Yellow lateral margins complete. Pleurae bluish black, the mesopleura with oblong-oval yellow spot, and a white pubescent spot below it. Scutellum shining olivaceous black with yellow border. Pile of thorax and scutellum obscurely yellowish, the latter with a fringe of long black hairs; pleurae with sparse whitish pile.

Abdomen deep shining black; first segment with only the antero-sides or with a very narrow anterior border yellow. Second segment with a narrow median, slightly arcuate or straight, interrupted yellow band, the lateral margins in front of this narrowly yellow; or with the band almost obsolete and the margins black. Third segment with a median longitudinal yellowish line abbreviated at both ends, the black in front forming more or less of a circle; at each side with a basal, broad yellow band, with an oval production posteriorly at the inner end. Fourth segment with five yellow spots, the median one similar to the median line on the third segment; two elongate broad, longitudinal spots, their posterior ends rounded, situated each side of the median spot, and two sub-square spots, longer laterally, on the anterior angles. Fifth segment with the sides yellow, more narrowly so posteriorly. Apical margins of second to fifth segments yellow or reddish. In darker specimens the median lines are almost obsolete and the spots all smaller, those on the posterior angles of the fourth segment triangular and the apex of the fifth segment black. The spots on the third segment occupy not more than the anterior half of the segment where they are longest. (In *geminatus* they always occupy considerably more than half, even in very dark specimens.)

Legs yellow, including the hind coxae; posterior femora black, except the ends; tibiae with a black band near the end; hind tarsi brown, anterior tarsi reddish apically; the hind femora sometimes with only a black band sub-apically in the female. In the male the hind tibiae broadly produced at the apical end, and arcuate; hind femora strongly arcuate, the process near the base stouter and with shorter arm projecting posteriorly than in *geminatus*.

Wings hyaline, stigma yellowish brown.

♀. Antennae with the third joint broadly brownish above; face distinctly white pilose below; front shining black, black pilose; not as much narrowed above as in *geminatus* and the yellow on the sides also seems to be slightly narrower; abdomen, second pair of basal spots moderately broad, a little broader medially and laterally, interrupted medially by a roundish black circle with a dibber-shaped yellow spot in its middle, spots not reaching the margin; spots on the fourth segment enlarged postero-medially; fifth segment with triangular spots on the basal corners and a smaller anterior spot in the middle; in other respects as in the male.

Holotype. ♂, Victoria, B.C., May 5, 1919, (W. Downes).

Allotype. ♀, Saanich Dist., B.C., May 17, 1909 (Downes).

Types in the Canadian National Collection. Paratypes, 40 specimens of both sexes from California, Oregon and British Columbia.